

# **Bridge Inventory & Structural Recommendation Report For I-15; Black Ridge to Iron County Line**

**Structure: 1D-644; I-15, Black Ridge Interchange (MP 36.74)**

**Structure: 3D-644; I-15, Black Ridge Interchange (MP 36.74)**

**Structure: 0E-1209; I-15, 0.5 Miles North of Black Rock Interchange (MP 37.20)**

**Structure: 1D-633; I-15, Kolob Canyon Interchange (MP 40.23)**

**Structure: 3D-633; I-15, Kolob Canyon Interchange (MP 40.23)**

**Structure: 0E-1128; I-15, 0.6 Miles North of Kolob Canyon Interchange, Dry Creek (MP 40.83)**



Project Manager: Kim Manwill

Project Number: IM-15-1(75)34

PIN number: 4423

FiNet Program Number: 7045001D

**UDOT**

Structures Division

Region 4 Cedar City

Prepared by

Daniel Page (April 2004)

*Updated by Raymond Earl (November 2007)*

FY: 2010

***Reviewed by Structures Team: 04/20/2004 will revise after scoping Meeting***

***Updated: 10/13/2005***

# **Structure Inventory & Recommendation Report**

## **Summary**

### **Purpose of Report:**

This report presents a conceptual overview of structure needs for a roadway project on I-15 in Washington County. It is intended to convey the need, scope, and cost estimate for the structure portion of the project.

### **Project Information:**

**Region:** 4C **Route No.:** I-15 **Date:** November 2004

**Project Name:** I-15, Black Ridge to Iron County Line

**Beg. R.P.:** 34 **End R.P.:** 42.0

**Project Number:** IM-15-1(75)34 **PIN:** 4423 **FiNet Program Number:** 7045001D

**Project Design:** Bridge: UDOT Structures Division; Roadway: Region 4 Preconstruction

**Project Mgr:** Kim Manwill

### **Project Scope:**

#### **1. Deficiencies & History:**

<i><b>Structure</b></i>	<i><b>Yr. Built</b></i>	<i><b>Suff. Rating</b></i>	<i><b>Deck</b></i>	<i><b>Super</b></i>	<i><b>Sub</b></i>	<i><b>Construction History</b></i>	<i><b>Other:</b></i>
<b>1D-644</b>	1959	93	7	8	6		
<b>3D-644</b>	1959	93	7	7	7	New Overlay placed in	
<b>0E-1209</b>	1960	70	N/A	N/A	N/A		Culvert 7 Channel 7
<b>1D-633</b>	1959	94	7	7	7		
<b>3D-633</b>	1959	93.5	6	7	7		
<b>0E-1128</b>	1959	65.0	N/A	N/A	N/A		Culvert 7 Channel 6

Deficiencies Include but are not limited to:

#### **1D-644; I-15, Black Ridge Interchange**

- 01/30/2003 The gaps next to the curb on the east side of the bridge remain.
- 01/30/2003 Tipping in the wingwalls appears no worse.
- 2/28/89 There is a 2in wide crack next to curb, water is running down along wings.
- 2/28/89 Wingwalls have tipped out 1-2in at top.

#### **3D-644; I-15, Black Ridge Interchange**

- 01/30/2003 Erosion due to poor draining is undermining slab. Situation is deteriorating slowly.
- 1/30/97 Overlay looks good, curb on the west side of the bridge has area of damage it appears as if from impact.
- 2/28/89 Both westerly wingwalls have tipped outward as indicated above. In addition, the southwest wingwalls show some rotational movement away from backwall leaving 2-3in gap at top. Northwest wingwalls has 1in gap.

#### **0E-1209; I-15, 0.5 Miles North of Black Rock Interchange**

- 01/30/2003 Joint at center is leaking. Northwest wingwall is eroding under end of wall.
- 03/13/91 Inlet retaining walls have tipped so they are not inline with the inlet of the box, this is about four inches at the top.

#### **1D-633; I-15, Kolob Canyon Interchange**

- 01/30/2003 There is heavy spot rusting on the bridge rail.
- 01/30/2003 There are erosion channels in the soil slope protections.
- 01/30/2003 The back wall and relief joints are open.

#### **3D-633; I-15, Kolob Canyon Interchange**

- 01/30/2003 Wearing surface is in good condition. There is small area of scaling and spalling along the edge of the northeast overhang. Efflorescence remains light along the cracks in the bottom of the deck.
- 01/30/2003 Backwall joints are cracked open.
- 02/01/01 The deck continues to have cracking with moderate efflorescence and the thickness of asphalt on the deck is excessive. The joint materials are completely covered with the thickness of asphalt, but continue to leak.

#### **0E-1128; I-15, 0.6 Miles North of Kolob Canyon Interchange**

- Structure is eligible for widening which would eliminate the need for guardrail on outside shoulders. Would need special treatment at outlet because of 2' – 3' of channel degradation that is now present
- 01/30/2003 The wingwalls are deteriorating, the SW and NE are in the worse shape. The undermining continues to occur and other conditions apply.
- 02/10/93 SAME, CHANNEL IS NOW UNDERCUTTING THE CUTOFF WALL, UNDER A FOOT.
- 2/28/89 Channel degradation has resulted in 2-3' drop in channel flow at outlet of structure.

#### **2. Plan:**

This project is intended to provide “*preventive maintenance treatments*” to extend the life of the above-mentioned bridges.

#### **3. Work items to be completed as part of project:**

The primary work for all four structures will be to remove the existing overlay, pothole patch the deck, waterproofing membrane, overlay, seal parapets, replace the old joints, and place new pavement markings.

- Asphalt Surfacing Removal (Structures)
- Pothole Patching (Deck Only)
- Waterproofing Membrane (Deck & Approach Slabs)

- 2" HMA Overlay
- 1" OGSC
- Seal Parapets
- Joint Replacement

**4. Work items not included in this project:**

The structural inventory and recommendation report only addresses structural needs, and is intended to be a component of the overall project. Other needs such as pavement, roadway, geometry, capacity, safety, utilities, and environmental needs are not included in the Concept Report.

**5. Design Exceptions Required:**

Not expected for the structures portion.

**6. Maintenance Considerations:**

Region 4 Maintenance Station 4522 should be included in the concept development.

**7. Construction Considerations:**

Construction easements and staging areas, night work, off peak work, A+B bidding and Limitations of Operations should be considered.

Structure	Bridge Railings	Transition	Approach Guardrail	Approach Guardrail	Pier Protection	Scour Critical	Under Clearance
<b>1D 644</b>	Substandard	Substandard	Meets Standards	Meets Standards	Not Required	Not Over Waterway	17.323 ft
<b>3D 644</b>	Substandard	Meets Standards	Meets Standards	Meets Standards	Not Required	Not Over Waterway	17.323 ft
<b>0E 1209</b>	Not Required	Not Required	Meets Standards	Meets Standards	Not Required	Not Over Waterway	-
<b>1D 633</b>	Substandard	Substandard	Substandard	Substandard	Not Required	Not Over Waterway	16.175 ft
<b>3D 633</b>	Substandard	Substandard	Substandard	Substandard	Not Required	Not Over Waterway	16.175 ft
<b>0E 1128</b>	Not Required	Not Required	Meets Standards	Substandard	Not Required	8 Stable above footings	-

**8. Risk Analysis: (None anticipated at this time)**

**9. Development Process:**

New or Major Reconstruction	_____
Rehabilitation	_____ X _____
Preservation	_____ X _____

## **Schedule of Project:**

See Concept Report for overall project schedule.

### **Funding Overview:**

1.     **Funding Source:**           Federal Funds (IM)
2.     **Amount Programmed: \$ 16,700,000**
3.     **Structure Cost Estimate: \$**

An approximate cost estimate for the structural work on this project includes:

**Black Ridge to Iron County Line****IM-15-1( )34****Fiscal Year: 2007**

Structure:	Description	Quantity	Unit	Cost		Total Cost
<b>1D-644</b>	<b><i>I-15, Black Ridge Interchange</i></b>					
	Waterproofing membrane (Deck & Appr Slabs)	1938	SF	\$ 6.00	\$	11,628.00
	Pothole patching Deck Only (0 -5%)	59	SF	\$ 35.00	\$	2,061.50
	2" HMA 3/4 inch (deck & Appr Slab)	24	TON	\$ 120.00	\$	2,907.00
	1" OGSC	12	TON	\$ 120.00	\$	1,453.50
	Asphalt Surfacing Removal (structures)*	215	SQ YD	\$ 12.00	\$	2,584.00
<b>3D-644</b>	<b><i>I-15, Black Ridge Interchange</i></b>					
	Waterproofing membrane (Deck & Appr Slabs)	1938	SF	\$ 6.00	\$	11,628.00
	Pothole patching Deck Only (0 -5%)	59	SF	\$ 35.00	\$	2,061.50
	2" HMA 3/4 inch (deck & Appr Slab)	24	TON	\$ 120.00	\$	2,907.00
	1" OGSC	12	TON	\$ 120.00	\$	1,453.50
	Asphalt Surfacing Removal (structures)*	215	SQ YD	\$ 12.00	\$	2,584.00
<b>OE-1209</b>	<b><i>I-15, 0.5 Miles North of Black Rock Interchange</i></b>					
	NO WORK TO BE DONE ON THIS BOX CULVERT AT THIS TIME					
<b>1D-633</b>	<b><i>I-15, Kolob Canyon Interchange</i></b>					
	Waterproofing membrane (Deck & Appr Slabs)	6310	SF	\$ 6.00	\$	37,860.00
	Pothole patching Deck Only (0 -5%)	272	SF	\$ 35.00	\$	9,513.00
	2" HMA 3/4 inch (deck & Appr Slab)	76	TON	\$ 120.00	\$	9,105.33
	Asphalt Surfacing Removal (structures)*	701	SQ YD	\$ 12.00	\$	8,413.33
	1" OGSC	38	TON	\$ 120.00	\$	4,552.67
	Clean and Seal Backwall & Relief Joints		LIN FT	\$ 20.00	\$	-
<b>3D-633</b>	<b><i>I-15, Kolob Canyon Interchange</i></b>					
	Waterproofing membrane (Deck & Appr Slabs)	6310	SF	\$ 6.00	\$	37,860.00
	Pothole Patching (5-10%)	544	SF	\$ 35.00	\$	19,026.00
	2" HMA 3/4 inch (deck & Appr Slab)	76	TON	\$ 120.00	\$	9,105.33
	Asphalt Surfacing Removal (structures)*	701	SQ YD	\$ 12.00	\$	8,413.33
	1" OGSC	38	TON	\$ 120.00	\$	4,552.67
	Joint Replacement	90	LIN FT	\$ 400.00	\$	36,000.00
	Clean and Seal Backwall & Relief Joints		LIN FT	\$ 20.00	\$	-
<b>OE-1128</b>	<b><i>I-15, 0.6 Miles North of Kolob Canyon Interchange</i></b>					
	Consideration of expanding/replacing the existing box culvert should be evaluated					
	existing box dimensions: 188'-2 9/16" X 24'					
	possible new box dimensions:	500	CU YDS	\$ 600.00	\$	300,000.00
	200' X 36' x 9'-10"(single cell box)					
	<b>Misc. Items</b>					
	Traffic Control	To be Included in Roadway Estimate				
	MOT	To be Included in Roadway Estimate				
	Mobilization	To be Included in Roadway Estimate				
	Bridge Subtotal					\$ 525,669.66
	15 % Contingency					\$ 78,850.45
	<b>Total for all Bridges</b>					<b>\$ 604,520.11</b>

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## Bridge Locations

